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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,935	12/03/2003	Ralph T. Yang	UMJ-116-E (2172p3)	5384

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EXAMINER
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DANG, THUAN D

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/726,935

Applicant(s)

YANG ET AL.

Examiner

Thuan D. Dang

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) 43-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/14/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election of group I in the reply filed on 3/31/2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### *Claim Rejections - 35 USC § 102/103*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4, 19, 21, 22, 25, and 26 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Michlmayr (4,188,285).

Michlmayr discloses a process of removal of thiophenes from gasoline by contacting the feed with an adsorbent which is silver exchanged faujasite zeolite, namely silver-Y zeolite (the abstract; examples).

Michlmayr is silent as to the mechanism how thiophene is bound to the adsorbent, namely pi-complexation bonds (see entire patent for details). However, it is expected that the silver-Y zeolite adsorbent of Michlmayr is inherently bound to thiophene by pi-complexation since the adsorbent of the claimed process and the one of Michlmayr are similar.

Similarly, it is expected that the Michlmayr can inherently adsorb more than 1/mmol/gram of thiophene since the adsorbent of the claimed process and the one of Michlmayr are similar.

The temperature and pressure of the process can be found on column 1, lines 30-40.

Art Unit: 1764

Claims 3 and 20 are rejected under 35 U.S.C. 103(a) as obvious over Michlmayr (4,188,285).

Michlmayr discloses a process as discussed above.

Michlmayr does not disclose that the silver exchanged Y zeolite is Ag(I)Y. However, it is obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by using Ag(I)Y since it is expected that using any silver exchanged Y zeolite would yield similar results.

Michlmayr also does not disclose that the gasoline is unleaded (see the entire patent for details). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by using unleaded gasoline since it is expected any gasoline containing thiophene can be treated.

Claims 5, 7 are rejected under 35 U.S.C. 103(a) as obvious over Michlmayr (4,188,285) in view of Tsybulevskiy et al (US2002/0009404).

Michlmayr discloses a process as discussed above.

Michlmayr does not disclose a carrier for the adsorbent. However, Tsybulevskiy discloses an adsorbent also containing binder such as silica (paragraph 0041).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by including a binder to the adsorbent to arrive at the applicants' claimed process since it is expected that this would increase the strength of the adsorbent.

Art Unit: 1764

Once, a binder such as silica is obviously selected as the binder, metals are expected also to cover on the binder. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by selecting appropriate silica having appropriate surface area to optimize the properties of adsorbent.

Claim 6 is rejected under 35 U.S.C. 103(a) as obvious over Michlmayr (4,188,285) in view of Tsybulevskiy et al (US2002/0009404) further in view of Satokawa et al (US2001/0014304A1).

Michlmayr discloses a process as discussed above.

Michlmayr does not disclose that the silver is silver nitrate (see entire patent). However, Satokawa discloses an adsorbent used for adsorb thiophene containing silver nitrate (abstract; paragraph 54).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by using silver nitrate as the silver component since Satokawa discloses that his adsorbent exhibits excellent absorptivity of sulfur compounds.

Claims 8-10, 14-17, 23, 24 are rejected under 35 U.S.C. 103(a) as obvious over Michlmayr (4,188,285) in view of Milton (2,882,244).

Michlmayr discloses a process of removal of thiophenes from gasoline by contacting the feed with an adsorbent which is silver exchanged faujasite zeolite, namely silver-Y zeolite (the abstract; examples).

Art Unit: 1764

Michlmayr does not disclose how to activate and regenerate the spent adsorbent.

However, Milton discloses to activate a molecular sieve adsorbent used for removing thiophene by raising the temperature (col. 10, lines 40-45; col. 12, lines 40-50; col. 15, lines 23-40). Also note that Milton discloses nickel can be used as a cation of the adsorbent (col. 6, lines 66).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by using Milton's method to activate the adsorbent by heating the adsorbent for an appropriate period of time to optimize the life of the adsorbent.

Claims 11-13, and 18 are rejected under 35 U.S.C. 103(a) as obvious over Michlmayr (4,188,285) in view of Milton (2,882,244) further in view of Satokawa et al (US2001/0014304A1).

Michlmayr discloses a process as discussed above.

Michlmayr does not disclose that the copper is used as the cation (see entire patent). However, Satokawa discloses an adsorbent used for adsorb thiophene containing copper (abstract; paragraph 54).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by copper as the cation since Satokawa discloses that his adsorbent exhibits excellent absorptivity of sulfur compounds.

Art Unit: 1764

Claims 27, 28, 29, 31, 32, 33, 34, and 38-42 are rejected under 35 U.S.C. 103(a) as obvious over Michlmayr (4,188,285) in view of Milton (2,882,244) further in view of Tsybulevskiy et al (US2002/0009404).

Michlmayr discloses a process of removal of thiophenes from gasoline by contacting the feed with an adsorbent which is silver exchanged faujasite zeolite, namely silver-Y zeolite (the abstract; examples).

Michlmayr does not disclose how to activate and regenerate the spent adsorbent. However, Milton discloses to activate a molecular sieve adsorbent used for removing thiophene by raising the temperature (col. 10, lines 40-45; col. 12, lines 40-50; col. 15, lines 23-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by using Milton's method to activate the adsorbent by heating the adsorbent for an appropriate period of time to optimize the life of the adsorbent. Also note that Milton discloses nickel can be used as a cation of the adsorbent (col. 6, lines 66).

Michlmayr is silent as to the mechanism how thiophene is bound to the adsorbent, namely pi-complexation bonds (see entire patent for details). However, it is expected that the silver-Y zeolite adsorbent of Michlmayr is inherently bound to thiophene by pi-complexation since the adsorbent of the claimed process and the one of Michlmayr are similar.

Similarly, it is expected that the Michlmayr can inherently adsorb more than 1/mmol/gram of thiophene since the adsorbent of the claimed process and the one of Michlmayr are similar.

The temperature and pressure of the process can be found on column 1, lines 30-40.



Art Unit: 1764

Michlmayr also does not disclose that the gasoline is unleaded (see the entire patent for details). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by using unleaded gasoline since it is expected any gasoline containing thiophene can be treated.

Michlmayr does not disclose that the silver exchanged Y zeolite is Ag(I)Y. However, it is obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by using Ag(I)Y since it is expected that using any silver exchanged Y zeolite would yield similar results.

Michlmayr does not disclose a carrier for the adsorbent. However, Tsybulevskiy discloses an adsorbent also containing binder such as silica (paragraph 0041).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by including a binder to the adsorbent to arrive at the applicants' claimed process since it is expected that this would increase the strength of the adsorbent.

Once, a binder such as silica is obviously selected as the binder, metals are expected also to cover on the binder. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by selecting appropriate silica having appropriate surface area to optimize the properties of adsorbent.

Claims 30, 35 are rejected under 35 U.S.C. 103(a) as obvious over Michlmayr (4,188,285) in view of Milton (2,882,244) further in view of Tsybulevskiy et al (US2002/0009404) further in view of Satokawa et al (US2001/0014304A1).

Art Unit: 1764

Michlmayr discloses a process as discussed above.

Michlmayr does not disclose that the copper is used as the cation (see entire patent).

However, Satokawa discloses an adsorbent used for adsorb thiophene containing copper (abstract; paragraph 54).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michlmayr process by copper as the cation since Satokawa discloses that his adsorbent exhibits excellent absorptivity of sulfur compounds..

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

(1a) Claims 1-9, 19-20, 22, 24-28, 38, 39, and 42 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 and 7-15 of copending Application No. 10/10/234,681. Although the conflicting claims are not identical, they are not patentably distinct from each other because the conflicting claims disclose a process substantially the same except that there are different ways of

Art Unit: 1764

limitations recited in each set of claims in each application. However, the claimed process is obviously modified from the conflicting claims.

(2a) Claims 1-9, 19, 20, 22, 25-28, 36-38, and 42 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/613,131. Although the conflicting claims are not identical, they are not patentably distinct from each other because the conflicting claims discloses a process substantially the same except that there are different ways of limitations recited in each set of claims in each application. However, the claimed process is obviously modified from the conflicting claims.

(3a) Claims 1-9, 19, 20, 22, 25-28, 36-39, and 42 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-42 of copending Application No. 10/393,962. Although the conflicting claims are not identical, they are not patentably distinct from each other because the conflicting claims discloses a process substantially the same except that there are different ways of limitations recited in each set of claims in each application. However, the claimed process is obviously modified from the conflicting claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan D. Dang whose telephone number is 571-272-1445. The examiner can normally be reached on Mon-Thu.

Art Unit: 1764

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thuan D. Dang  
Primary Examiner  
Art Unit 1764

10726935.20050510

A handwritten signature in black ink, appearing to read 'Thuan D. Dang', is written over the printed name and title.